

IN THE CLAIMS

Please reflect as follows, the previous amendments made to, and/or the status of, claims 1-10 existing as the filing date of the reissue application and the new claims 11-62 which have been added to the reissue application:

- 1.** (previously amended) A coated article comprising:
a temperature-sensitive substrate having a melting point lower than glass;
an anti-reflection coating including a plurality of layers [substantially] transparent to visible light, at least [one] two of said layers being a [DC] reactively sputtered high refractive index material layer having a refractive index higher than said substrate and between approximately 1.9 and 2.2 and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide, and at least one other layer being a low refractive index material layer having a refractive index lower than said substrate, wherein said high refractive index material layer farthest from said substrate having an optical thickness of about one-quarter to one-third wavelength at a wavelength between 480 and 560 nanometers.
- 2.** (original) The article of claim 1 wherein said substrate is plastic.
- 3.** (previously amended) The article of claim 1 wherein said other layer is [substantially] silicon dioxide.
- 4.** (previously amended) The article of claim 3 wherein said [DC] reactively sputtered material is tin oxide.
- 5.** (previously amended) The article of claim 3 wherein said [DC] reactively sputtered material is tin-doped indium oxide.
- 6.** (cancelled)

7. (previously amended) The article of claim 1 wherein said plurality of layers includes four layers designated the first, second, third and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate,

said first layer composed of silicon dioxide and having a refractive index lower than said substrate and having an optical thickness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers,

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said second layer having a refractive index higher than said substrate and between approximately 1.9 and 2.2 and having an optical thickness between about one-quarter and one-third of a wavelength at a wavelength between 480 and 560 nanometers and comprising one of said two layers,

said third layer having a refractive index lower than said second layer and comprising said one other layer,

said fourth layer having a refractive index greater than said third layer and comprising the other of said two layers,

said third and fourth layers having a total optical thickness less than one-quarter wavelength at a wavelength between 480 and 560 nanometers, and

[at least one of] said second and fourth layers being said selected sputtered material.

8. (previously amended) A process for making a coated article, comprising the steps of:

providing a temperature-sensitive [surface] substrate having a melting point lower than glass and a surface for receiving an anti-reflection coating; [and]

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[disposing] depositing an anti-reflection coating including a plurality of layers transparent to visible light on said surface, said depositing step including the steps of [DC reactively] sputtering at least two layers of high refractive index a material selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide, and having an index of refraction between approximately 1.9 and 2.2 wherein the layer of high refractive index material farthest from the substrate has an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers; and

depositing at least one [other] layer of a low refractive index material having a refractive index [different from] lower than said [DC reactively sputtered] high refractive index material

74 wherein one of said low refractive index material layers is deposited between said high refractive index material layers.

9. (previously amended) An anti-reflection coating for a substrate comprising:

four layers substantially transparent to visible light and designated the first, second, third, and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate;

said first layer [substantially] composed of silicon dioxide having a refractive index lower than said substrate, and optical thickness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 94.2 nanometers;

said second layer [substantially] composed of [DC reactively sputtered] tin oxide having a refractive index higher than said substrate, an optical thickness between about one-quarter and one third of a wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 76.4 nanometers;

75 said third layer [substantially] composed of silicon dioxide having a refractive index lower than said second layer and a physical thickness of about 31.9 nanometers;

said fourth layer [substantially] composed of [DC reactively sputtered] tin oxide having a refractive index greater than said third layer and a physical thickness of about 20.3 nanometers; and

said third and fourth layers having a total optical thickness less than one-quarter wavelength at a wavelength between 480 and 560 nanometers.

10. (previously amended) An anti-reflection coating for a substrate, comprising:

four layers [substantially] transparent to visible light and designated the first, second, third, and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate;

said first layer [substantially] composed of silicon dioxide having a refractive index lower than said substrate, an optical thickness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 92.2 nanometers;

said second layer [substantially] composed of [DC reactively sputtered] tin oxide having a refractive index higher than said substrate, an optical thickness between [about] one-quarter

and one third of a wavelength at a wavelength between 480 and 560 nanometers, and a physical thickness of about 78.1 nanometers;

said third layer [substantially] composed of silicon dioxide having a refractive index lower than said second layer and a physical thickness of about 32.2 nanometers;

said fourth layer [substantially] composed of [DC reactively sputtered] tin oxide having a refractive index greater than said third layer and a physical thickness of about 18.6 nanometers; and

said third and fourth layers having a total optical thickness less than one-quarter wavelength at a wavelength between 480 and 560 nanometers.

11. (new) The article of claim 1 wherein said sputtered material is a DC reactively sputtered material.

12. (new) The article of claim 11 wherein said substrate is plastic.

13. (new) The article of claim 11 wherein said other layer is substantially silicon dioxide.

14. (new) The article of claim 12 wherein said DC reactively sputtered material is tin oxide.

15. (new) The article of claim 12 wherein said DC reactively sputtered material is tin-doped indium oxide.

16. (added and subsequently cancelled)

17. (new) The article of claim 11 wherein said plurality of layers includes four layers designated the first, second, third and fourth layers in consecutive numerical order beginning with the layer farthest from the substrate,

said first layer composed of silicon dioxide with a refractive index lower than said substrate and having an optical thickness of about one-quarter wavelength at a wavelength between 480 and 560 nanometers,

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said second layer having a refractive index higher than said substrate and between approximately 1.9 and 2.2 and having an optical thickness between about one-quarter and one-third of a wavelength at a wavelength between 480 and 560 nanometers and comprising one of said two layers,

said third layer having a refractive index lower than said second layer and comprising said one other layer,

said fourth layer having a refractive index greater than said third layer and comprising the other of said two layers, said third and fourth layers having a total optical thickness less than one-quarter wavelength at a wavelength between 480 and 560 nanometers, and said second and fourth layers being said selected sputtered material.

18. (new) The process of claim 8 wherein the step of sputtering is DC reactively sputtering.

19. (new) The coating of claim 9 wherein the tin-oxide of said second layer is reactively sputtered and the tin oxide of said fourth layer is reactively sputtered.

20. (new) The coating of claim 19 wherein said tin oxide of said second layer is DC reactively sputtered and said tin oxide of said fourth layer is DC reactively sputtered.

21. (new) The coating of claim 10 wherein the tin oxide of said second layer is reactively sputtered and the tin oxide of said fourth layer is reactively sputtered.

22. (new) The coating of claim 21 wherein the tin oxide of said second layer is DC reactively sputtered and the tin oxide of said fourth layer is DC reactively sputtered.

23. (added and subsequently cancelled)

24. (added and subsequently cancelled)

25. (added and subsequently cancelled)

26. (added and subsequently cancelled)

27. (added and subsequently cancelled)

28. (added and subsequently cancelled)

29. (added and subsequently cancelled)

30. (added and subsequently cancelled)

31. (new) The coating of claim 9 wherein the tin oxide of said second layer is sputtered and the tin oxide of said fourth layer is sputtered.

32. (new) The coating of claim 10 wherein the tin oxide of said second layer is sputtered and the tin oxide of said fourth layer is sputtered.

33. (new) An article comprising:

(a) a temperature-sensitive substrate having a melting point lower than glass; and

(b) an anti-reflective coating comprising a plurality of layers transparent to visible light beginning with the first layer being farthest from said substrate, wherein:

(1) a first layer and a third layer are composed of silicon dioxide; and

(2) a second layer and a fourth layer have refractive indices between approximately 1.9 and 2.2 and are each composed of and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide, wherein said second layer has an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers.

34. (new) The article of claim 33 wherein the temperature-sensitive substrate is plastic.

35. (added and subsequently cancelled)

36. (new) An article comprising:

(a) a temperature-sensitive substrate having a melting point lower than glass; and

(b) an anti-reflection coating comprising a plurality of layers transparent to visible light, wherein:

(1) a first layer and a third layer are composed of silicon dioxide and

(2) a second layer and a fourth layer have refractive indices between approximately 1.9 and 2.2, and wherein the second and fourth layers are each composed of and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and the tin-zinc oxide, wherein the second layer has a thickness of between approximately 77.11 and 78.13 nm.

37. (new) An article comprising:

(a) a temperature-sensitive substrate having a melting point lower than glass; and

(b) an anti-reflection coating comprising a plurality of layers transparent to visible light, wherein:

(1) a first layer and a third layer are composed of silicon dioxide; and

(2) a second layer and a fourth layer have refractive indices between approximately 1.9 and 2.2, and wherein the second and fourth layers are each composed of and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped indium oxide, tin-bismuth oxide, and tin-zinc oxide, wherein the fourth layer has a thickness of between approximately 18.64 and 22.83 nm.

38. (new) A method for providing an anti-reflection coating to a plastic substrate, wherein the coating comprises a first, second, third and fourth layer in consecutive numerical order, each layer being transparent to visible light, with the first layer being farthest from the substrate, comprising:

depositing the fourth layer by reactive sputtering, wherein the fourth layer is composed of tin-doped indium oxide having an index of refraction between approximately 1.9 and 2.2;

depositing the third layer on the fourth layer by reactive sputtering, wherein the third layer is composed of silicon dioxide;

depositing the second layer on the third layer by reactive sputtering at an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers, wherein the second layer is substantially composed of tin-doped indium oxide having an index of refraction between approximately 1.9 and 2.2; and

depositing the first layer on the second layer by reactively sputtering, wherein the first layer is substantially composed of silicon dioxide.

39. (new) An anti-reflection coating for a plastic substrate comprising:

(1) a first layer composed of silicon dioxide;

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(2) a conductive second layer, closer to the substrate than the first layer, composed of tin-doped indium oxide having an index of refraction between approximately 1.9 and 2.2 and an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers;

(3) a third layer, closer to the substrate than the second layer, composed of silicon dioxide; and

(4) a conductive fourth layer, closer to the substrate than the third layer, composed of tin-doped indium oxide having an index of refraction between approximately 1.9 and 2.2, wherein the first, second, third and fourth layers are transparent to visible light.

40. (new) A method for providing an anti-reflection coating to a plastic substrate, wherein the coating comprises a first, second, third and fourth layer in consecutive numerical order with the first layer being farthest from the substrate, wherein each layer is transparent to visible light, comprising:

depositing the first and third layers by reactive sputtering, wherein the first layer is composed of silicon dioxide; and

depositing the second and fourth layers by reactively sputtering, wherein the second and fourth layers have an index of refraction between approximately 1.9 and 2.2, are composed of and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide and wherein said second layer is applied at an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 460 nanometers.

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41. (new) The method of claim 40, wherein the act of depositing the second and fourth layers comprises depositing the second layer such that the layer is between approximately 76.11 and 76.35 nm and depositing the fourth layer such that the layer is between approximately 18.64 and 22.83 nm.

42. (new) The method of claim 40, wherein the act of depositing the first silicon dioxide layer comprises depositing the layer such that the layer is between approximately 92.02 and 94.16 nm.

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43. (new) An anti-reflection coating for a plastic substrate comprising:
a plastic substrate and a coating wherein said coating includes,
four layers transparent to visible light designated the first, second, third and fourth layers
in consecutive numerical order beginning with the layer farthest from the substrate, said first and
third layers comprised of silicon dioxide and said second and fourth layers having a refractive
index higher than said substrate and between 1.9 and 2.2 and selected from the group consisting
of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-
bismuth oxide and tin-zinc oxide; and
said second layer having an optical thickness of about one-quarter to one-third of a
wavelength at a wavelength of about 480 to 560 nanometers.

44. (added and subsequently cancelled)

45. (added and subsequently cancelled)

46. (added and subsequently cancelled)

47. (added and subsequently cancelled)

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48. (new) The process of claim 8 wherein the act of depositing at least one other anti-reflection coating layer comprises depositing the layer between the at least two layers.

49. (new) An anti-reflective coating for a plastic substrate consisting essentially of:
a plurality of high refractive index material layers transparent to visible light, having a refractive index between 1.9 and 2.2 and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide and tin-zinc oxide and wherein the high refractive index material layer farthest from said substrate has an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers; and

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at least one low refractive index material layer having a refractive index material layer lower than each of said plurality of high refractive index material layers wherein one of said at least one low refractive index material layers is disposed between adjacent ones of said plurality of high refractive index material layers.

50. (new) An anti-reflection coating for a plastic substrate comprising:
a plurality of high refractive index material layers comprising first and second high refractive index material layers transparent to visible light having a refractive index higher than said substrate and between 1.9 and 2.2 and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide and tin-zinc oxide; and
at least one low refractive index material layer having a refractive index lower than said substrate wherein said at least one low refractive index material layer is positioned between said first and second high refractive index material layers and the high refracting index material layer farthest from said substrate has an optical thickness of about one-quarter to one-third wavelength at a wavelength from 480 to 560 nanometers.

51. (added and subsequently cancelled)

52. (added and subsequently cancelled)

53. (added and subsequently cancelled)

54. (new) The article of claim 1 wherein the low refractive index material farthest from said substrate has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

55. (new) The process of claim 8 wherein the low refractive index material farthest from said substrate is deposited at an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

56. (new) The article of claim 33 wherein said first layer has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

57. (new) The method of claim 38 wherein said first layer has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

58. (new) The coating of claim 39 wherein said first layer has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

59. (new) The method of claim 40 wherein said first layer has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

60. (new) The coating of claim 43 wherein said first layer has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

61. (new) The coating of claim 49 wherein the low refractive index material farthest from said substrate has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

62. (new) The coating of claim 50 wherein the low refractive index material farthest from said substrate has an optical thickness of about one-quarter wavelength at a wavelength from 480 to 560 nanometers.

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